a discussion by Professor H. L. Rietz, University of Iowa. "A report on the ensign school" was made by Professor E. J. Moulton and R. E. Wilson, of Northwestern University.

After a session of the American Mathematical Society, to which the members of the association were invited to hear the retiring address of President L. E. Dickson on "Mathematics in war perspective," there was a joint session of the two organizations at which the following papers were read:

Some mathematical features of ballistics: Captain A. A. Bennett, Aberdeen Proving Ground.

How the map problem was met in the war: Professor Kurt Laves, University of Chicago.

Notes concerning recent books on navigation: Alice Bache Gould, University of Chicago.

Statistics methods for preparation for war department service: Professor H. L. Rietz, University of Iowa.

Ordnance problems: Major W. D. MacMillan, Ordnance Department, Washington, D. C.

Practical exterior ballistics: Lieutenant P. L. Alger, Aberdeen Proving Ground.

The effect of the earth's rotation and curvature on the path of a projectile: Professor W. H. Roever, Aberdeen Proving Ground.

On low velocity high angle fire: Professor H. F. Blichfeldt, Aberdeen Proving Ground.

There was a joint dinner of the two organizations on Friday evening. The annual business meeting was held Friday noon, and the following officers were elected:

President—H. E. Slaught.

Vice-presidents—R. G. D. Richardson, H. L. Rietz.

Members of the Executive Council for three years—L. P. Eisenhart, B. F. Finkel, E. V. Huntington, E. H. Moore.

The report of the secretary-treasurer showed that eight members had died during the year, 61 individual and 4 institutional members had been added, 49 individual and 4 institutional members had withdrawn, the association thus numbering 1,060 individual and 84 institutional members. One hundred and ten members are known to the secretary-treasurer as having been enrolled in national service, including a small number in Y. M. C. A. and other non-combatant branches.

It was announced that the council had appointed R. C. Archibald, of Brown University, as editor-in-chief of the official journal, the *American Mathematical Monthly*, in place of R. D. Carmichael, resigned; and that twenty persons and one institution had been elected to membership at this meeting.

The financial statement showed a balance for December 1, 1917, of $3,485.47, receipts on 1918 business of $4,566.21, expenditures amounting to $4,539.84, and a consequent balance on 1919 business of $3,511.84, which with $216.27 already received on 1919 business gives a balance under date of December 2, 1918, of $3,728.11. This will be reduced to approximately $1,700 by bills payable on 1918 business.

W. D. Cairns,
Secretary-Treasurer

AMERICAN SOCIETY OF ZOOLOGISTS

SIXTEENTH ANNUAL MEETING

The proceedings of the sixteenth annual meeting of the American Society of Zoologists are published in full in the *Anatomical Record* for January, 1919, together with abstracts of the papers presented.

The following were elected to membership in the society: Arthur Challen Baker, Bureau of Entomology, Washington, D. C.; Samuel Randall Detwiler, Yale Medical School, New Haven, Conn.; Harrison Randall Hunt, West Virginia University, Morgantown, W. Va.; Edwin Booth Powers, Colorado College, Colorado Springs, Colo.; William Hay Talliaferro, Chemical Welfare Service, New Haven, Conn.; Elmer Roberts, University of Illinois, Urbana, Ill.

C. M. Child, Chicago, was elected president; H. H. Wilder, Northampton, Mass., vice-president; W. C. Allee, Lake Forest, Ill., secretary-treasurer, and George Lefevre, Columbia, Mo., member of executive committee.

The following papers were presented:

Parasitology

On the transmission of two fowl tapeworms: James E. Ackert, Kansas State Agricultural College.

Recent discoveries concerning the life history of Ascaris lumbricoides: G. H. Ransom and W. D. Foster, Bureau of Animal Industry, Washington, D. C.

The true homology of the cuticula and subcuticula of trematodes and cestodes: H. S. Pratt, Haverford College.

Comparative Anatomy

The metamorphosis of two species of cyclops: Cyclops signatus (C. albidus Jurine) and Cyclops americanus Marsh: Esther F. Byrnes.

The olfactory organs of Orthoptera: N. E. McINDOO, Bureau of Entomology, Washington, D. C.

General Physiology

The formation of buds "Tethya" buds in sponges of the genus Coppatias: W. J. CROZIER and BLANCHE B. CROZIER, Bermuda Biological Station for Research.

On the temporal relations of asexual propagation and gametic reproduction in Coscinasterias; with a note on the function of the Madreporite: W. J. CROZIER, University of Illinois, College of Medicine.

The olfactory sense of lepidopterous larvæ: N. E. McINDOO, Bureau of Entomology, Washington, D. C.

Sensory reactions of Chromodoris zebra: W. J. CROZIER, Bermuda Biological Station, and L. B. AREY, Northwestern University Medical School.

The relative stimulating efficiency of continuous and intermittent light upon Vanessa antiopa: WILLIAM L. DOLLEY, JR., Randolph-Macon College, Ashland, Va.

The rates of CO_2 produced by starved and fed Paramecia and their possible relations to the rates of oxidation in the unfertilized and fertilized sea urchin egg: E. J. LUND, University of Minnesota.

The photoreactions of partially blinded whip-tail scorpions: BRADLEY M. PATTEN, Western Reserve University, School of Medicine.

Excretion crystals in ameba: A. A. SCHAEFFER, University of Tennessee.

The reactions and resistance of certain marine fishes to H ions: V. E. SHELFORD, University of Illinois.

A simple method for measuring the CO_2 produced by protozoa and other small organisms: E. J. LUND, University of Minnesota.

The effect of KCN on the rate of oxygen consumption of Planaria: GEORGE DELWIN ALLEN, University of Minnesota (introduced by E. J. Lund).

The influence of temperature and concentrations on toxicity of salts to fish: EDWIN B. POWERS, Colorado College (introduced by V. E. Shelford).

Ecology

Further contributions upon the natural history of Chromodoris zebra; the question of adaptive coloration: W. J. CROZIER, University of Illinois, College of Medicine.

The zoological significance of the functional fenestral plate in the ear capsule of caudate amphibia: H. D. REED, Cornell University.

The coloration and habits of West Indian and Hawaiian reef fishes: W. H. LONGLEY, Goucher College.

Suggestions as to the climograph of deciduous forest invertebrates as illustrated by experimental data on the codling moth: V. E. SHELFORD, Illinois Natural History Survey.

On the nature and source of some adaptive features in the ethnology of Chiton: W. J. CROZIER, University of Illinois, College of Medicine.

Embryology

The anlage of endoderm and mesoderm in the opossum: CARL HARTMAN, University of Texas.

The œstrous cycle in rats: J. A. LONG, University of California.

Results of extirpation both thyroid and pituitary glands in tadpoles of Bufo and Rana: BENNETT M. ALLEN, University of Kansas.

Miscellaneous notes regarding experimental studies upon the endocrine glands of Rana and Bufo: BENNETT M. ALLEN, University of Kansas.

Effect of the extirpation of the thyroid gland upon the pituitary gland in Bufo: MARY ELIZABETH LARSON, University of Kansas (introduced by Bennet M. Allen).

Evolution and Genetics

The solitary and aggregated generations in Salpidæ: MAYNARD M. METCALF, Orchard Laboratory.

Correlation of fertility and fecundity in an inbred stock: ROSCOE R. HYDE, Indiana State Normal School and Johns Hopkins University.

The extent of the occurrence of sex intergrades in Cladocera: ARTHUR M. BANTA, Station for Experimental Evolution.

Inheritance of color in the domestic turkey: W. R. B. ROBERTSON, University of Kansas.

Nuclear reorganization and its relation to conjugation and inheritance in Arcella vulgaris: H. M. MACCURDY, Alma College.

Several ways in which Gynandromorphs in Insects may arise: T. H. MORGAN, Columbia University.

Duplication: C. R. BRIDGES, Columbia University (introduced by T. H. Morgan).

Exhibits

Demonstration of sex intergrades in Cladocera. A. M. Banta, Station for Experimental Evolution.

Models showing typical in the development of the human embryo. Department of Embryology, Carnegie Institution of Washington.

In addition to these papers the Ecological Society of America contributed the following papers to the joint program held on the evening of December 27:

The hydrogen ion concentration of the sea water of Puget Sound and the reactions of the herring (Clupea pallasii Cuvier) to hydrogen concentration in sea water: Edwin B. Powers, Colorado College.

The PH of Puget Sound in the vicinity of Friday Harbor varies with other conditions, tides, depths and locality. The herring reacts positively to a PH of 7.9 to 8.0. The reaction is positive to this PH concentration both from a lower and a higher PH.

Ecological investigations under the federal government: Harry C. Oberholser, National Museum.

The most important ecological investigation under federal government auspices are carried on as a basis for other work, and are of far-reaching importance. The Fish Commission studies the relation of fishes to their environment; the Forest Service that of trees; the Bureau of Plant Industry of various other plants, particularly with regard to plant diseases and plant introductions; the Bureau of Animal Industry, the life history of internal animal parasites; the Bureau of Entomology, the life history of insects in their relation to economic problems; and the Biological Survey, the relations of animals, birds and other animals to their environment and to each other, for the determination of the life zones of distribution.

The distribution of the internal parasites of the fish and other aquatic vertebrates of Oneida Lake, New York: Henry S. Pratt, Haverford College.

An important feature of the meeting was the conference between government and laboratory zoologists on Saturday afternoon. Subject: Methods of securing Better Cooperation between Government and Laboratory Zoologists in the Solution of Problems of General or National Importance; Professor C. E. McClung, presiding.

Papers on plans and problems of the Bureau of Entomology that can be furthered by cooperation with laboratory zoologists: Dr. L. O. Howard.

Discussion led by Professor J. C. Needham, Cornell University.

Paper from the Bureau of Fisheries: Dr. Hugh Smith.

Discussion led by Professor H. B. Ward, University of Illinois.

Paper from the Bureau of Animal Industry: Dr. B. H. Ransom.

Discussion led by Professor Herbert Osborn, Ohio State University.

Paper from the Biological Survey: Dr. E. W. Nelson.

Discussion led by Professor R. K. Nabours, Manhattan, Kansas.

Plans of National Research Council for advancing American Research: Dr. J. C. Merriam, vice-chairman, National Research Council.

Concluding discussion and proposal of definite plans: Professor C. E. McClung.

The proceedings of the conference will be published in full in a later issue of Science.

THE AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE, SECTION F, ZOOLOGY

The Convocation Week meetings of Section F were held in conjunction with those of The Society of American Zoologists at Baltimore, Maryland, December 26–28.

At the business session, Bennett M. Allen, Lawrence, Kansas, was elected member of the council; J. H. Gerould, Hanover, N. H., was chosen member of the General Committee; Herbert Osborn, Columbus, Ohio, was reelected member of Sectional Committee for five years, and W. M. Wheeler, Bussey Institution, was elected vice-president of the section for 1919.

In the absence of the secretary H. V. Neal in Y. M. C. A. service in Italy, the secretary of the zoologists, W. C. Allee, Lake Forest, Ill., acted as secretary for the meeting. W. C. Allee,
Secretary

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